

US EPA ARCHIVE DOCUMENT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

SAM NUNN

ATLANTA FEDERAL CENTER

61 FORSYTH STREET

ATLANTA GEORGIA 30303-8960

JAN 17 2014

Herschel T. Vinyard

Secretary

Florida Department of Environmental Protection

3900 Commonwealth Boulevard

Tallahassee, Florida 32399-3000

Dear Secretary Vinyard:

The U. S. Environmental Protection Agency has completed its review of the site specific alternative criterion (SSAC) for total phosphorus (TP) for the Smith Canal. Florida Department of Environmental Protection submitted revised Chapter 62-302, including the SSAC, to the EPA on June 13, 2012, as new or revised water quality standards with the necessary certification by the FDEP General Counsel, pursuant to 40 CFR Part 131. The SSAC was included in the list of site specific numeric interpretations of paragraph 62-302.530(47)(b), Florida Administrative Code (F.A.C.), referenced in paragraph 62-302.531(2)(a), F.A.C. and published at FDEP's website at <http://www.dep.state.fl.us/water/wqssp/swq-docs.htm>. FDEP submitted the numeric interpretation of the state narrative nutrient criterion for WBID 2962 expressed in the Smith Canal Total Maximum Daily Load report as the SSAC. FDEP intends for this SSAC to serve as the numeric nutrient criterion for TP for Smith Canal in place of the otherwise applicable TP criterion set out in paragraphs 62-302.531(2)(c) F.A.C.

In accordance with section 303(c) of the Clean Water Act, I am hereby approving the SSAC for the Smith Canal as a revised water quality standard for TP. Any other criteria applicable to this waterbody remain in effect, including other applicable criteria at 62-302.531(2)(c), F.A.C. and the requirements of paragraph 62-302.530(47)(a), F.A.C. The details of the SSAC are discussed in the enclosed documentation. We would like to commend you and your staff for your continued efforts in environmental protection for the State of Florida.

If you have any questions regarding the EPA's approval, please contact me at (404) 562-9345 or have a member of your staff contact Ms. Annie M. Godfrey, Water Quality Standards Section Chief at (404) 562-9967.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Giattina".

James D. Giattina

Director

Water Protection Division

Enclosure

cc: Matthew Z. Leopold, FDEP  
Daryll Joyner, FDEP

**Decision Document for Hierarchy 1 Site Specific Alternative Criterion  
for Smith Canal**

Summary Information

<b>WBID</b>	<b>Description</b>	<b>Class</b>	<b>Waterbody Type <i>Impaired Waters Rule (IWR) Run 40</i></b>	<b>Listing Parameter</b>
2962	Smith Canal	Class III (freshwater)	Stream	Dissolved Oxygen (DO)

A DO Total Maximum Daily Load (TMDL) for Smith Canal WBID 2962 was developed by Florida Department of Environmental Protection and approved by the Environmental Protection Agency on September 30, 2009, pursuant to section 303(d) of the Clean Water Act (CWA). This TMDL was developed to identify the level of nutrients that would prevent an imbalance of flora and fauna as required by the state's narrative nutrient criterion at paragraph 62-302.530(47)(b), Florida Administrative Code (F.A.C). FDEP determined that a total phosphorus (TP) load of 1.95 tons/year (yr), not to be exceeded as an annual load, would meet its narrative criterion and adopted that load as a TMDL value at subsection 62-304.505(10), F.A.C. FDEP has submitted the TP load from the TMDL for the EPA review as a hierarchy 1 site specific alternative nutrient criterion (SSAC) for the Smith Canal WBID 2962, pursuant to section 303(c) of the CWA and EPA's implementing regulations at 40 CFR Part 131. This decision document approves the SSAC for TP of 1.95 tons/yr, not to be exceeded as an annual load, as a hierarchy 1 criterion for Smith Canal WBID 2962. Any other criteria applicable to this waterbody remain in effect. Specifically as to nutrients total nitrogen and chlorophyll *a* criteria consistent with paragraph 62-302.531(2)(c), F.A.C. continue to apply, as well as the requirements of paragraph 62-302.530(47)(a), F.A.C. unless and until FDEP takes site specific actions for these parameters or waters that are approved by the EPA.

In a letter dated June 13, 2012, from Thomas M. Beason, General Counsel for FDEP, to Gwendolyn Keyes Fleming, Regional Administrator of the EPA's Region 4 Office, FDEP submitted the numeric interpretation of the state narrative nutrient criterion as expressed in the Smith Canal WBID 2962 TMDL as the SSAC for the Smith Canal WBID 2962. This SSAC serves as a primary site specific interpretation of Florida's narrative water quality criterion for nutrients set out in paragraph 62-302.530(47)(b), F.A.C., in accordance with paragraph 62-302.531(2)(a), F.A.C. Pursuant to section 303(c) of the CWA, this revised water quality standard is subject to review and approval by the EPA since FDEP intends for this SSAC to serve as a numeric nutrient criterion for TP for Smith Canal in the place of the otherwise applicable TP criterion set out in paragraph 62-302.531(2)(c), F.A.C. In the June 13, 2012 letter, the FDEP General Counsel certified that the revised water quality standards were duly adopted pursuant to Florida law.

The EPA's decision to approve this criterion is subject to the results of consultation under section 7 of the Endangered Species Act with the U.S. Fish and Wildlife Service. By approving the standards "subject to the results of consultation," the EPA retains its discretion to take

appropriate action if the consultation identifies deficiencies in the standard requiring remedial action by the EPA. The EPA will notify FDEP of the results of the section 7 consultation upon completion of the action.

#### Description of waters for which a SSAC has been proposed

Smith Canal (WBID 2962) is a 6-mile-long first-order stream located in the northwest portion of Seminole County in Central Florida. WBID 2962 flows northwest and drains to the St. Johns River about 1.4 miles upstream of Lake Monroe. WBID 2962 is a Class III freshwater stream with designated uses of recreation, propagation, and maintenance of a healthy, well-balanced population of fish and wildlife. The watershed draining to WBID 2962 encompasses 9,993 acres, much of which (4,217 acres; 42.2%) is occupied by urban land uses (low-, medium- and high-density residential and industrial/commercial). Residential areas of the watershed include portions of Sanford (population: 49,000) and Lake Mary (population: 15,000). The remaining area is primarily composed of natural land uses (forest, water and wetlands) (2,990 acres; 30%) and agriculture (1,125 acres; 11.3%).

#### Discussion of how the load was derived

WBID 2962 was verified as impaired for DO on the basis of observations below Florida Impaired Waters Rule (IWR) thresholds during the January 1, 2001 through June 30, 2008 verified period. Consequently, WBID 2962 was added to the verified list of impaired waters by Secretarial Order on May 19, 2009. WBID 2962 was verified as impaired for DO on the basis of ten percent or more of DO observations (28 of 62 observations [25.2%]) below the 5.0 mg/L DO criterion for Class III freshwater streams. TP was determined to be the causative pollutant for the DO impairment with a median concentration of 0.17 mg/L during the 2001-2008 verified period. During the previous 2004 listing cycle, BOD was determined to be the causative pollutant on the basis of the median value (2.1 mg/L) exceeding the state screening level of 2.0 mg/L. However, during the 2001-2008 verified period, the median BOD concentration was 2.0 mg/L and BOD was not reaffirmed as the causative pollutant.

To address this DO impairment, FDEP developed a TMDL document for WBID 2962 dated September 2009, which was approved by the EPA on September 30, 2009 (EPA WATERS database query 6/21/13). The Dissolved Oxygen Total Maximum Daily Load for Smith Canal (WBID 2962) adopted at 62-304.505(10) was for Total Phosphorus of 1.95 tons/yr.

The TMDL selects DO as the TMDL target, using the criterion minimum of 5.0 mg/L for Class III freshwater streams. To achieve a 5.0 mg/L DO concentration, the target TP concentration calculated for the canal was 0.10 mg/l. This was based on the 10<sup>th</sup> percentile quantile line from the data regression analysis. The 10<sup>th</sup> percentile quantile line indicates where 10% of the data values would lie below the DO criterion. The DO target for this TMDL is applied to ensure that the IWR threshold for impairment equating to no more than 10% of observations would lie below the criterion.

With data from eight sampling stations in WBID 2962, FDEP reported that DO levels ranged from 1.9 mg/L to 8.69 mg/L (23 to 91 percent saturation) between 1999 and 2008. A quantile regression analysis revealed a significant negative correlation between DO and TP using 1999-2008 data, indicating that elevated TP is the primary factor influencing the low DO in WBID

2962. A weak correlation between DO and TN was also observed with these data and no correlation was observed between DO and BOD. Based on the 10<sup>th</sup> percentile quantile regression, a TP concentration of 0.10 mg/L would achieve the 5.0 mg/L DO target in WBID 2962. FDEP confirmed that modeled natural background conditions in WBID 2962 from 1996-2003 ranged from 0.068 to 0.095 mg/L, always less than the 0.10 mg/L TP concentration, so this target could be considered achievable.

FDEP estimated TN and TP loading from nonpoint sources from 1996-2003, including surface runoff, groundwater input, nutrient sediment release and direct atmospheric deposition using the Hydrologic Simulation Program-Fortran (HSPF) Model. For each year from 1996-2003 FDEP simulated the target loading and percent TP load reduction that would be necessary to achieve a TP concentration of 0.10 mg/L. The TMDL is expressed as the annual average TP load (1.95 tons/yr) calculated by averaging the target loads in each year and the percent reduction (26%) calculated by averaging the percent reductions in each year from 1996-2003. The TMDL describes the percent load reduction as a median but the target loading as the annual average. Both the average and median percent reduction arrive at a 26% reduction, while the median target loading would be 1.88 tons/yr, therefore this approval is predicated on a TMDL selection of the average target loading and percent reduction from 1996-2003 which are the more protective loading and reduction.

#### Consideration of TMDL load as a new or revised water quality standard

This water quality target applies to Smith Canal (WBID 2962). Florida's DO criterion of 5.0 mg/L for a Class III freshwater body is used as the TMDL target. The DO target for this TMDL is applied to ensure that the IWR threshold for impairment (10% or more of observations below the criterion) is met using the 10<sup>th</sup> percentile quantile line in a regression relationship with TP. By implementing a TP load reduction, FDEP aims to address the DO impairment by controlling aquatic plant growth. FDEP determined that a TP load of 1.95 tons/yr "represents the maximum long-term annual average TP loadings that the canal can assimilate and maintain a balanced aquatic flora and fauna".

#### Conclusion

Based on the chemical, physical and biological data presented in the development of the SSAC, the EPA concludes that the SSAC for TP established for the Smith Canal WBID 2962 protects healthy, well-balanced biological communities in the waters to which the SSAC applies and is consistent with the CWA and its implementing regulations. More specifically, the SSAC is consistent with both 40 CFR Part 131.11(b)(1)(ii) and the EPA's 304(a) guidance on nutrient criteria. The TP SSAC for WBID 2962 for TP loading of 1.95 tons/yr, not to be exceeded as an annual load, will protect water quality and aquatic life. FDEP did not address downstream protection in this TMDL. Paragraph 62-302.531(4) will apply to this WBID in conjunction with the Hierarchy 1 SSAC to ensure attainment and maintenance of water quality standards of downstream waters, in accordance with 40 CFR Part 131.10. In accordance with section 303(c) of the CWA, the SSAC for TP for 1.95 tons/yr, not to be exceeded as an annual load, is hereby approved as consistent with the CWA and 40 CFR Part 131.



Smith Canal (WBID 2962) watershed in Seminole County (TMDL p. 3, Figure 1.2). Also see Figure 1.1, TMDL Page 2 for the location of Smith Canal (WBID 2962) within the Middle St. Johns Basin.

### Appendix 1 – Summary of the TMDL Background

<b>Name(s) of Addressed Water(s)</b>	Smith Canal
<b>Waterbody Type(s)</b>	Stream (IWR Run 40)
<b>WBIDs</b>	2962
<b>Latitude/Longitude</b>	N/A
<b>Description</b>	<p>WBID 2962 (Smith Canal) is a 6-mile-long first-order stream located in the northwest portion of Seminole County in Central Florida (TMDL p. 1, 46). WBID 2962 flows northwest and drains to the St. Johns River about 1.4 miles upstream of Lake Monroe (TMDL p. 1). The watershed draining to WBID 2962 encompasses 9,993 acres, much of which (4,217 acres; 42.2%) is occupied by urban land uses (low-, medium-, and high-density residential, and industrial/commercial) (TMDL p. 20). Residential areas of the watershed include portions of Sanford (population: 49,000) and Lake Mary (population: 15,000) (TMDL p. 1). The remaining area is primarily composed of natural land uses (forest, water, and wetlands) (2,990 acres; 30%) and agriculture (1,125 acres; 11.3%) (TMDL p. 20).</p>
<b>Classification(s)</b>	Class III (freshwater) (TMDL p. 9)
<b>Basin</b>	Middle St. Johns Basin (TMDL p. 1)
<b>Date Placed on Verified List</b>	May 19, 2009 (TMDL p. 1)
<b>Date TMDL was approved by EPA</b>	September 30, 2009 (EPA WATERS database query 6/21/13)
<b>Reference Streams/Lakes</b>	N/A
<b>Source of Majority of Flow</b>	<p>Smith Canal is a first-order stream (TMDL p. 46). Because no gauging stations were located in WBID 2962, FDEP estimated flow using data from two nearby stations: St. Johns River near Sanford in the Lake Monroe watershed and Deep Creek in the Lake Harney watershed (TMDL p. 28). FDEP estimated WBID 2962 received a mean input of 14,270 acre-ft/yr from the watershed and atmospheric deposition between 1996 and 2003 (TMDL p. 32). For additional hydrologic information the TMDL refers to the 2003 FDEP Basin Status Report for the MSJR (TMDL p. 1).</p>
<b>Indicators</b>	<p>The attainment of the F.A.C. 62-302 DO criterion (5.0 mg/L) is based on the achievement of a TP concentration correlating with the 10<sup>th</sup> percentile quantile line of DO observations (TMDL p. 12). Although WBID 2962 does not exceed the chl-a threshold of 20 µg/L, the TMDL states that the low DO conditions could cause natural populations of flora and fauna to become imbalanced. Reductions in nutrient loading are expected to decrease algal and periphyton biomass (TMDL p. 14). The TMDL notes that aquatic plants grow densely in WBID 2962 (TMDL p. 14-15).</p>

<b>Identification of Causative Pollutants (as determined by measurements of response endpoints or indicators)</b>	TP was determined to be the causative pollutant for the DO impairment with a median concentration of 0.17 mg/L during the 2001-2008 verified period (TMDL p. 6). During the previous 2004 listing cycle, BOD was determined to be the causative pollutant on the basis of the median value (2.1 mg/L) exceeding the state screening level of 2.0 mg/L (TMDL p. 5). However, during the 2001-2008 verified period, the median BOD concentration was 2.0 mg/L and BOD was not reaffirmed as the causative pollutant (TMDL p. 6). FDEP supported the determination of TP as the pollutant responsible for WBID 2962's low DO on the basis of significant negative correlations between DO and TP during regression analysis performed with 1999–2008 data, as well as, a weak correlation between DO and TN and no correlation between DO and BOD (TMDL p. 12).
<b>Sources and Concentrations of Nutrient Enrichment</b>	TP loads entering WBID 2962 are primarily from nonpoint sources including surface runoff, nutrient sediment release, and atmospheric deposition (TMDL p. 18). Nutrient loading from the watershed and atmospheric deposition contribute 21.71 tons/yr TN and 2.64 tons/yr TP to WBID 2962 (TMDL p. 32). Atmospheric deposition contributed about 2 percent of the TP load and 5 percent of the TN load. The small contribution from atmospheric deposition is attributed to the small surface area of WBID 2962 (TMDL p. 31). Based on the high end of reported septic tank repairs in Seminole County, FDEP estimated that there are about 29 failing septic tanks in the watershed draining to WBID 2962. Discharges from failing septic tanks contribute calculated concentrations of 39.0 mg/L TN and 11.0 mg/L TP into WBID 2962 (TMDL p. 23). There are no NPDES-permitted wastewater facilities discharging to the watershed of WBID 2962. There is one Phase 1 MS4 stormwater permit identified (TMDL p. 17).
<b>Nutrient Watershed Region in Proposed 62.302</b>	Peninsular Stream, 0.12 mg/L (IWR Run 40)
<b>Proposed Nitrogen SSAC and Frequency</b>	N/A
<b>Proposed Phosphorus SSAC and Frequency</b>	1.95 tons/yr TP  This corresponds to a 26% reduction from the existing load and a TP concentration of 0.10 mg/L. (TMDL p. 35). Note that the TMDL is expressed as and codified in F.A.C. 62-304 as a load and percent reduction – the corresponding concentration is provided for informational purposes.
<b>Biological Index Score(s) (e.g. SCI, TSI, IBI)</b>	N/A